General

Guideline Title

Best evidence statement (BESt). Behavioral and oral motor interventions for feeding problems in children.

Bibliographic Source(s)

Cincinnati Children's Hospital Medical Center. Best evidence statement (BESt). Behavioral and oral motor interventions for feeding problems in children. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2013 Jul 15. 10 p. [54 references]

Guideline Status

This is the current release of the guideline.

Recommendations

Major Recommendations

The strength of the recommendation (strongly recommended, recommended, or no recommendation) and the quality of the evidence (1a-5b) are defined at the end of the "Major Recommendations" field.

1. It is recommended that an intensive feeding program model that combines oral motor and behavioral interventions may be used with children with severe feeding problems to increase intake. (Byars et al., 2003 [3a]; Sharp, Odom, & Jaquess, 2012 [4a]; Sharp et al., 2011 [4a]; Laud et al., 2009 [4a]; Lamm, De Felice, & Cargan, 2005 [4a]; Clawson, Kuchinski, & Bach, 2007 [4b]; Clawson, Palinski, & Elliott 2006 [4b]; Gulotta et al., 2005 [4b]; Harding, Faiman, & Wright, 2010 [5a]; Sharp, Harker & Jaquess, 2010 [5a]; Sharp & Jacquess, 2009 [5a]; Gibbons, Williams, & Riegal, 2007 [5a]; Tarbell & Allaire, 2002 [5a]; Shore et al., 1998 [5a]).
   Note: Programs ranged from 2 weeks to 8 weeks duration; treatments 4-11 times per day (Laud et al., 2009 [4a]; Lamm, De Felice, & Cargan, 2005 [4a]; Clawson, Kuchinski, & Bach, 2007 [4b]; Clawson, Palinski, & Elliott 2006 [4b]; Gulotta et al., 2005 [4b]; Gibbons, Williams, & Riegal, 2007 [5a]; Tarbell & Allaire, 2002 [5a]).

2. It is recommended that the following behavioral interventions within a treatment package may be used to increase intake for children with feeding problems:
   a. Differential attention* (Williams, Field, & Seiverling, 2010 [1b]; Kerwin, 1999 [1b])
   b. Positive reinforcement* (Williams, Field, & Seiverling, 2010 [1b]; Remington et al., 2012 [2a]; Cooke et al., 2011 [2a]; Byars et al., 2003 [3a]; Knox et al., 2012 [5a]; Kozlowski et al., 2011 [5a]; Binnendyk & Lucyshyn, 2009 [5a]; Gentry & Luisella, 2008 [5a]; Kelley et al., 2003 [5a]; Shore et al., 1998 [5a]; Larson, Ayllon, & Barrett, 1987 [5b])
   c. Escape extinction/escape prevention* (Williams, Field, & Seiverling, 2010 [1b]; Kerwin, 1999 [1b]; Byars et al., 2003 [3a]; Seiverling et al., 2012 [4a]; Sharp, Odom, & Jaquess, 2012 [4a]; Volkert et al., 2011 [4a]; Najdowski et al., 2010 [4a]; Williams et al., 2008 [4a]; VanDalen & Penrod, 2010 [4b]; Kozlowski et al., 2011 [5a]; Sharp, Harker, & Jaquess, 2010 [5a]; Valdimarsdottir, Halldorsdottir, & Sigurthardottir, 2010 [5a]; Sharp & Jacquess, 2009 [5a]; Girolami, Boscoe, & Roscoe, 2007 [5a]; Patel et al.,

2007 [5a]; Shore et al., 1998 [5a]; Kern & Marder, 1996 [5a]; Najdowski et al., 2003 [5b])

d. Stimulus fading* (Williams, Field & Seiverling, 2010 [1b]; Seiverling et al., 2012 [4a]; Sharp et al., 2011 [4a]; Knox et al., 2012 [5a]; Meier, Fryling, & Wallace, 2012 [5a]; Valdimarsdottir, Halldorsdottir, & Sigurthardottir, 2010 [5a]; Luiselli, Ricciardi, & Gilligan, 2005 [5a]; Patel et al., 2001 [5a]; Shore, et al., 1998 [5a]; Najdowski et al., 2003 [5b])
e. Simultaneous presentation* (Piazza et al., 2002 [4a]; VanDalen & Penrod, 2010 [4b]; Gentry & Luisella, 2008 [5a]; Buckley & Newchok, 2005 [5a]; Mueller et al., 2004 [5a]; Ahearn, 2003 [5a]; Kern & Marder, 1996 [5a])
f. Differential reinforcement of alternative behavior (DRA)* (Williams, Field, & Seiverling, 2010 [1b]; Sharp et al., 2011 [4a]; Najdowski et al., 2010 [4a]; Valdimarsdottir, Halldorsdottir, & Sigurthardottir, 2010 [5a]; Buckley & Newchok, 2005 [5a]; Mueller et al., 2004 [5a]; Patel et al., 2001 [5a]; Kahng, Boscoe, & Byrne, 2003 [5b]; Najdowski et al., 2003 [5b])
g. Use of a flipped spoon as a presentation method* (Sharp, Odom & Jaquess, 2012 [4a]; Volkert et al., 2011 [4a]; Sharp, Harker, & Jaquess, 2010 [5a])

Note: Interventions listed above are in rank order, based on strength of evidence.

*Definitions for terms marked with * may be found in the Supporting Information section of the original guideline document.

3. It is recommended that oral motor treatment for spoon-feeding, biting and chewing may be used to increase intake for children with cerebral palsy who have moderate feeding impairments (Snider, Majnemer & Darsaklis, 2011 [1b]; Davies, 2003 [1b]).
4. It is recommended that a child be exposed 10-15 times to a previously unfamiliar or non-preferred food to increase intake for children (4 months-7 years) with feeding difficulties (Remington et al., 2012 [2a]; Cooke et al., 2011 [2a]; Wardle et al., "Increasing," 2003 [2a]; Wardle et al., "Modifying," 2003 [2a]; Birch et al., 1998 [2a]; Sullivan & Birch, 1990 [2b]; Sullivan & Birch, 1994 [4a]).
   Note 1: There was a gap in evidence concerning exposure for children ages 8-24 months.

   Note 2: For children with Autism Spectrum Disorders (ASD), variable patterns of exposure (from less than 10 exposures to more than 10) were needed to increase intake (Williams et al., 2008 [4a]; Paul et al., 2007 [5a]).

   Note 3: For sustained increase in intake, pairing exposure with reinforcement (rewards) may be needed (Cooke et al., 2011 [2a]).

Definitions:

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5a or 5b	General review, expert opinion, case report, consensus report, or guideline
5	Local Consensus

†a = good quality study; b = lesser quality study

Table of Language and Definitions for Recommendation Strength

Language for Strength	Definition
It is strongly recommended that… It is strongly recommended that… not…	When the dimensions for judging the strength of the evidence are applied, there is high support that benefits clearly outweigh risks and burdens (or visa-versa for negative recommendations).
It is recommended that… It is recommended	When the dimensions for judging the strength of the evidence are applied, there is moderate support that benefits are closely balanced with risks and burdens.

Language for Strength	Definition
that not	There is insufficient evidence and a lack of consensus to make a recommendation…

Note: See the original guideline document for the dimensions used for judging the strength of the recommendation.

Clinical Algorithm(s)

None provided

Scope

Disease/Condition(s)

Feeding problems:

- Oral feeding problems
- Chronic food refusal
- Selectivity
- Failure to advance texture
- Inappropriate mealtime behaviors

Guideline Category

Management

Treatment

Clinical Specialty

Family Practice

Nursing

Nutrition

Pediatrics

Psychiatry

Psychology

Speech-Language Pathology

Intended Users

Advanced Practice Nurses

Nurses

Occupational Therapists

Physician Assistants

Physicians

Psychologists/Non-physician Behavioral Health Clinicians

Speech-Language Pathologists

Guideline Objective(s)

To evaluate, in children with feeding problems, if oral motor interventions with or without behavioral interventions are effective at increasing intake (quantity, variety, texture)

Target Population

Infants and children (birth through adolescence) with feeding problems including oral feeding problems, chronic food refusal, selectivity, failure to advance texture, and inappropriate mealtime behaviors such as throwing food and temper tantrums

Note: Children with feeding problems such as anorexia, bulimia, and pre-term infants with oral motor immaturity are not included.

Interventions and Practices Considered

1. Intensive feeding program model (combining oral motor and behavioral interventions)
2. Behavioral interventions:
    - Differential attention
    - Positive reinforcement
    - Escape extinction/escape prevention
    - Stimulus fading
    - Simultaneous presentation
    - Differential reinforcement of alternative behavior
    - Flipped spoon food presentation method
3. Oral motor treatment for spoon-feeding, biting and chewing
4. Exposure of child 10-15 times to a previously unfamiliar or non-preferred food

Major Outcomes Considered

Treatment effectiveness at increasing intake (quantity, variety, texture)

Methodology

Methods Used to Collect/Select the Evidence

Searches of Electronic Databases

Description of Methods Used to Collect/Select the Evidence

Search Strategy

- Databases: OVID MEDLINE, OVID CINAHL, OVID EBM Reviews (Cochrane), PubMed Clinical Queries, CAT Banks for OT, Center for Evidence-based Medicine, OT Evidence, National Guideline Clearinghouse, OT Exchange, OT Seeker, Pediatric Physical Therapy, PEDro, TRIP, University of Michigan Department of Pediatrics, The World Confederation of Physical Therapy, PsycINFO, Medlink
- Search Terms: Feeding Difficulties, Feeding Challenges, Feeding Dysfunction, Feeding Disorder, Feeding Disturbance, Feeding Delay, Feeding Aversion, Feeding and Sensory, Feeding Intervention, Feeding Therapy, Feeding Plan, Feeding and Behavior, Food and Aversion, Food and Sensitivity, Failure to Thrive, Refusal to Eat, Behavioral Strategies and Reinforcement, Behavioral Strategies and Reward, Behavioral Strategies and Sensory, Occupational Therapy and Feeding; Texture and Eating; Sensation and Eating; Sensory and Eating;

Tactile and Eating; Sensation and Feeding; Hypersensitivity and Feeding; Tactile and Feeding; Sensory Integration and Feeding; Sensory Strategies and Feeding; Sensory Processing and Oral Motor; Sensory Processing and Feeding

- Limits and Filters: Published date from 1990 to February 2013; Human; Language: English; Age Groups: Child, Preschool 2-5 years, Child, 6-12 years, Adolescence, 13-18 years
- Last search completed: February 2013

Number of Source Documents

Not stated

Methods Used to Assess the Quality and Strength of the Evidence

Weighting According to a Rating Scheme (Scheme Given)

Rating Scheme for the Strength of the Evidence

Table of Evidence Levels

Quality Level	Definition
1a† or 1b†	Systematic review, meta-analysis, or meta-synthesis of multiple studies
2a or 2b	Best study design for domain
3a or 3b	Fair study design for domain
4a or 4b	Weak study design for domain
5a or 5b	General review, expert opinion, case report, consensus report, or guideline
5	Local Consensus

†a = good quality study; b = lesser quality study

Methods Used to Analyze the Evidence

Systematic Review

Description of the Methods Used to Analyze the Evidence

Not stated

Methods Used to Formulate the Recommendations

Expert Consensus

Description of Methods Used to Formulate the Recommendations

Not stated

Rating Scheme for the Strength of the Recommendations

Table of Language and Definitions for Recommendation Strength

Language for Strength	Definition
It is strongly recommended that… It is strongly recommended that… not…	When the dimensions for judging the strength of the evidence are applied, there is high support that benefits clearly outweigh risks and burdens (or visa-versa for negative recommendations).
It is recommended that… It is recommended that… not…	When the dimensions for judging the strength of the evidence are applied, there is moderate support that benefits are closely balanced with risks and burdens.
There is insufficient evidence and a lack of consensus to make a recommendation…	

Note: See the original guideline document for the dimensions used for judging the strength of the recommendation.

Cost Analysis

A formal cost analysis was not performed and published cost analyses were not reviewed.

Method of Guideline Validation

Peer Review

Description of Method of Guideline Validation

This Best Evidence Statement (BESt) has been reviewed against quality criteria by two independent reviewers from the Cincinnati Children's Hospital Medical Center (CCHMC) Evidence Collaboration.

Evidence Supporting the Recommendations

References Supporting the Recommendations

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Type of Evidence Supporting the Recommendations

The type of supporting evidence is identified and graded for each recommendation (see the "Major Recommendations" field).

Benefits/Harms of Implementing the Guideline Recommendations

Potential Benefits

Improved outcomes in children with feeding problems through effective behavioral and oral motor interventions to increase food intake

Potential Harms

Not stated

Qualifying Statements

Qualifying Statements

Qualifying Statements

This Best Evidence Statement addresses only key points of care for the target population; it is not intended to be a comprehensive practice guideline. These recommendations result from review of literature and practices current at the time of their formulation. This Best Evidence Statement does not preclude using care modalities proven efficacious in studies published subsequent to the current revision of this document. This document is not intended to impose standards of care preventing selective variances from the recommendations to meet the specific and unique requirements of individual patients. Adherence to this Statement is voluntary. The clinician in light of the individual circumstances presented by the patient must make the ultimate judgment regarding the priority of any specific procedure.

Implementation of the Guideline

Description of Implementation Strategy

Applicability Issues

Further development of interdisciplinary collaboration between occupational therapy, behavioral psychology and other medical professionals is needed. Program development, structure, processes and staffing would be required to implement recommendations regarding intensity. A potential barrier may be the cost of training occupational therapists to implement these recommendations. Clinical judgment is necessary to apply the evidence to each patient, due to the variability of the body of evidence. While studies mentioned the importance of treating medical conditions comorbid with food refusal, the role of medical management in the treatment of food refusal was not clear. Further research is needed in this area.

Implementation Tools

Audit Criteria/Indicators

For information about availability, see the *Availability of Companion Documents* and *Patient Resources* fields below.

Institute of Medicine (IOM) National Healthcare Quality Report Categories

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Patient-centeredness

Identifying Information and Availability

Bibliographic Source(s)

Cincinnati Children's Hospital Medical Center. Best evidence statement (BESt). Behavioral and oral motor interventions for feeding problems in children. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2013 Jul 15. 10 p. [54 references]

Adaptation

Not applicable: The guideline was not adapted from another source.

Date Released

2013 Jul 15

Guideline Developer(s)

Cincinnati Children's Hospital Medical Center - Hospital/Medical Center

Source(s) of Funding

Cincinnati Children's Hospital Medical Center

No external funding was received for development of this Best Evidence Statement (BESt).

Guideline Committee

Not stated

Composition of Group That Authored the Guideline

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Financial Disclosures/Conflicts of Interest

Conflict of interest declaration forms are filed with the Cincinnati Children's Hospital Medical Center (CCHMC) Evidence-Based Decision Making (EBDM) group. No financial conflicts of interest were found.

Guideline Status

This is the current release of the guideline.

Guideline Availability

Electronic copies: Available from the Cincinnati Children's Hospital Medical Center Web site .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at EBDMInfo@cchmc.org.

Availability of Companion Documents

The following are available:

- Judging the strength of a recommendation. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2009 May 7. 1 p. Available from the Cincinnati Children's Hospital Medical Center (CCHMC) Web site .
- Grading a body of evidence to answer a clinical question. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2009 May 7. 1 p. Available from the CCHMC Web site .
- Table of evidence levels. Cincinnati (OH): Cincinnati Children's Hospital Medical Center; 2009 May 7. 1 p. Available from the CCHMC Web site .

Print copies: For information regarding the full-text guideline, print copies, or evidence-based practice support services contact the Cincinnati Children's Hospital Medical Center Health James M. Anderson Center for Health Systems Excellence at EBDMInfo@cchmc.org.

In addition, suggested process or outcome measures are available in the original guideline document .

Patient Resources

None available

NGC Status

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